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A COMPARISON OF THE PSYCHOLINGUISTIC FUNCTIONING OF "EDUCATIONALLY- DEPRIVED" AND "EDUCATIONALLY-ADVANTAGED" CHILDREN.

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Identifiers-Illinois Test Of Psycholinguistic Abilities

A study was conducted to delineate the qualitative differences in the language abilities of two disadvantaged groups and one advantaged group of kindergarten and first grade children who were tested on the Illinois Test of Psycholinguistic Abilities. (As part of a larger study, the present report deals only with a part of the pretest phase.) Scores were compared, and an analysis of profile similarities showed that groups were most similar on subtests requiring sequential habits. The greatest performance discrepancies among the groups occurred on the analogs, vocabulary, and grammar subtests. Results indicate that strong syntactic habits are characteristic of higher-level functioning and that sequential language habits are characteristic of more primitive levels of language ability. Two hypotheses are proposed in explanation of the study results: (1) performance on sequential tests is dependent on the relatively fixed capacity of a subject's short-term memory, while other subtests require the ability to "structure" learning which is relatively more dependent upon experience; and (2) since the educationally-deprived children have not developed the higher-level facility with their language, they are relatively free from hypotheses about learning tasks. (MS)

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# A COMPARISON OF THE PSYCHOLINGUISTIC FUNCTIONING OF "EDUCATIONALLY-DEPRIVED" AND "EDUCATIONALLY-ADVANTAGED" CHILDREN

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# A Comparison of the Psycholinguistic Functioning of "Educationally-Deprived" and "Educationally-Advantaged" Children

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## Abstract

A comparison was made of the scores on the Illinois Test of Psycholinguistic Ability obtained by three groups of kindergarten and first-grade children. Two of these groups were chosen from a "disadvantaged" environment while the third group came from an "advantaged" setting. Analysis of profile similarities reveals the greatest concordance between groups on subtests requiring sequential habits. The largest discrepancies are on the "analogues," "vocabulary," and "grammar" subtests. Several explanations for these findings are discussed.

This study compares the language functioning of children who were predicted to differ in their language habits. It was the purpose of the present study to delineate the qualitative differences in the language abilities of the groups examined.

This report is part of a larger study, still in progress, which consists of an examination of the changes in language patterns of predominantly Negro children after one year in an "integrated" school. This larger study follows a traditional pre- post-test design. The present report deals only with a part of the pre-test phase.

The schools under investigation are in a suburban midwestern community of 60,000 people. The ongoing nature of the program of integration makes it desirable to treat this community anonymously in the present report. The median income of this community is $7,550. Approximately five per cent of the population are Negro and 94 per cent Caucasian.

This community, which we shall hereafter call Center City, was faced with the problem of <u>de facto</u> segregation in one of its schools. The Unity School in Center City was declared a <u>de facto</u> segregated school because approximately 70 per cent of its population were Negroes, while less than five per cent of Center City were members of this race. Segregation was to be abolished by transferring the Unity School children to predominantly white schools in the Center City system. This was the decision of the School Board.

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The questions raised by the desegregation procedure were manifold. The opportunity to research them was clear. However, it was also clear that research questions would have to be subordinated to the welfare of the children involved. The community would tolerate no segregated control group to act as a comparison for its integrated experimental group. With this limitation in mind the opportunity to learn from this situation still seemed clear.

It was the purpose of this study to compare the level of linguistic functioning of children in the kindergarten and first grade at a de facto segregated school with children at other schools in the Center City system. Those children who were attending a segregated school in the lower income area of Center City were designated "disadvantaged." These children were predominantly Negro.

A group of predominantly white children living in the suburban areas of Center City were identified as "advantaged" by virtue of the higher income level of the area from which they came.

## Method

Sample. The sample in the present study included the children from three different school populations. Table 1 contains a comparison of the three groups. All of the kindergarten and first grade children attending the Unity School in Center City were included. The Unity School is located in the "ghetto" in Center City where a majority of the Negroes live. The children in this school were

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Insert Table 1 about here

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scheduled to be integrated by being bussed to other schools in the Center City school system. These children are defined as being disadvantaged by virtue of their segregated school and the lower socio-economic status of the area from which they come.

The second sample of children was selected from the Diversity School. This school has children from an area which borders the area of the Unity School. Approximately 50% of the children at the Diversity School are Negro. It is possible that in the future Diversity School will be labeled a de facto segregated school and its children also dispersed throughout the Center City system. The sample of children for this study chosen from Diversity School were all attending the kindergarten and first grade. Since there were more children in the kindergarten and first grade in Diversity School than there were in Unity School, it was necessary to select a random sample from among these children at Diversity School. One restriction was placed on the selection: the children were chosen randomly from the "ghetto" that borders Diversity School. That is, no children were selected for this sample if they lived outside of the Center City "ghetto." It was hoped that by this sampling it would be possible to select children who would be like those at Unity School. The Diversity School would represent a "control" group for the Unity School children, since the Diversity School children would remain in their own neighborhoods attending a local school, while the Unity School children were being bused away from their local neighborhoods.

The third sample of children was chosen from the public schools which were scheduled to receive children from the Unity School. The children of the receiver schools also attend de facto segregated schools since less than 3% of the population of these schools is Negro. However, in this case the segregation is voluntary, since it is possible for white children to live in the "ghetto", while their Negro counterparts are denied the mobility (for economic and social reasons) of living outside the "ghetto." Most of the receiver schools lie in the suburban areas. Four schools scheduled to receive Unity School children were chosen, and then a random selection of kindergarten and

first grade children was made from these schools.

Instruments. The Illinois Test of Psycholinguistic Ability (ITPA) was used to assess the language functioning of the children in this study. This test, developed by Kirk and McCarthy of the Institute for Research on Exceptional Children at the University of Illinois (Kirk & McCarthy, 1961), is appropriate for use with children from 2-1/2 to 9 years old. It contains nine subtests. A listing of the subtests and description of the tasks involved in each is contained in Table 2.

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Insert Table 2 about here

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The ITPA is an unusual test for several reasons. First, it is the only test currently available which has as its goal the comprehensive assessment of psycholinguistic functioning. Second, it is unusual because it was standardized on "normal" children only. These children were all Caucasians with IQs between 80 and 120, living in Decatur, Illinois. This "normal" sample is unusual in that the test was developed by special educators and is intended for use with "deviant" populations as a means of assessing their deviations from normality. The test intends that comparison be made with the "normal" group. A fuller discussion of the test and its standardization, along with critical comment, is available (Weener, Barritt, Semmel, 1965).

Administration. The ITPA is an individually administered test which is designed to be given only by trained examiners. In the present case graduate students at the University of Michigan were trained in the administration of the test during a two-week period in evening sessions. Consultants from the University of Illinois were employed to aid in this training procedure. Each child in the three samples was tested individually in the public school by a trained examiner during a two-week period from April 15 to May 1. In other

words, these children were tested during the last month of school at the end of either kindergarten or first grade.

## Results and Discussion

The three samples were combined to compute the intercorrelations for the nine subscales of the ITPA. An examination of Table 3 indicates that three subscales intercorrelate very highly with one another. The Auditory-Vocal

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Insert Table 3 about here

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Association Test correlates .62 with the Auditory-Vocal Automatic. The Auditory-Vocal Automatic correlates .50 with the Auditory-Decoding. The Auditory-Decoding correlates .54 with the Auditory-Vocal Association. In other words, the "controlled vocabulary" test in which a child is asked to answer yes or no after being read a sentence, the "analogies test" in which a child responds with the correct word to an analogy, and the "grammar test" in which an inflectional ending is required, are the three subtests which intercorrelate most highly with one another.

Table 4 is a comparison of the three school samples on the nine subscales and total score of the ITPA. These are standard scores from norms presented in the ITPA manual. It is interesting to note that the largest significant F values between the three groups occurs on the Auditory-Decoding, Auditory-Vocal Automatic, and Auditory-Vocal Association tests. In other words, the same three tests which intercorrelate most highly with one another are the three tests which draw the lines of distinction most clearly between the three groups.

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Insert Table 4 about here

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On six of the nine subscales there are significant differences among groups. On only two subscales are there significant differences between the Unity School

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and the Diversity School groups. The two subscales which distinguish the Unity School and the Diversity School children are the "vocabulary" and "grammar" test, respectively, Auditory-Decoding and Auditory-Vocal Automatic.

An examination of the mean scores in Table 4 shows that the Unity School group scores at the mean on only one subtest, that being the Auditory-Vocal Sequencing. This test is very similar to the Digit Repetition Test on the Stanford-Binet, differing from that test only in the rate of digit presentation.

The three groups do not differ on the Visual-Motor Sequencing Test (requiring the reproduction of a series of geometric forms), the Auditory-Vocal Sequencing (digit repetition), and the Vocal-Encoding Subtest (description of an object). It should be noted that two of these tests are sequential tasks.

One interesting observation which can be made from the present study concerns the performance of the Unity and Diversity School children on tasks requiring sequential habits. The norming group on which these standard scores are based were not disadvantaged children in any sense of the word. The Unity and Diversity school children are not different from the normal sample on sequential tasks. This finding can be related to a study done with retarded and normal children (Semmel, Barritt, Bennett, Perfetti, 1965). A comparison was made of the word-association responses of retarded and normal children. It was found that normal children gave more responses of the same form class as the stimulus words than did retarded subjects matched for age. The retarded subjects of lower intelligence tended to give more responses to word-association stimuli which could occur sequentially in a sentence. It would appear that strong syntactic habits are characteristic of higher-level functioning and that sequential language habits are characteristic of more primitive levels of language ability. The relationship between the findings of these studies can only be suggested from the present data. A future study will be

necessary in order to examine the relationships between the sequential subscales of the ITPA and sequential responses on a word-association task. For the present it seems reasonable to explain the lack of difference between advantaged and disadvantaged groups on this type of task as being related to developmental phenomena.

The third test which did not produce differences between groups was the Vocal-Encoding subtest. The task on this test involves the description of a simple object. It should be noted that most responses to this subscale at early age-levels consist of labeling words and simple sentences about the function of the object. Children usually develop facility with nouns earlier than they do with other form classes of words (Templin, 1957). Tasks which require simple labeling responses do not usually distinguish well between different stages of language development. Again the lack of discrepancy is consistent with our knowledge of developmental patterns.

Figure 1 contains a profile of the three school samples, illustrating the discrepancies and convergence of scores on the ITPA.

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Insert Figure 1 about here

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At least two hypotheses can be suggested for the lack of difference between the groups on sequential tasks. One hypothesis might be called the Interference Hypothesis, and it would go something like this. Since the "educationally-deprived" children have not developed the higher level facility with their language, they are relatively free from hypotheses about learning tasks presented to them. In the case of the present ITPA subscales these children are asked simply to memorize a meaningless series of either objects or numbers. It can be suggested that the Ss do not attempt to impose any structure on this task; rather, they simply get at the business of remembering in rather rote fashion

what has taken place, and then attempt to reproduce it as best they can. Children with more sophisticated language habits attempt to impose a structure on this situation in much the same way that they impose structure on meaningful tasks. When faced with a task that is essentially meaningless, their "set" to impose structure interferes with learning.

An alternative hypothesis can be called the No-Difference Hypothesis. This alternative would explain the homogeneity of performance on sequential tasks as a function of their culture-free nature. In other words, performance on sequential subtests is dependent on the relatively fixed capacity of a subject's short-term memory, while performance on other subtests requires the ability to "structure" learning which is relatively more dependent upon experience.

It seems to the authors of the present study that the No-Difference Hypothesis explains the present findings better than the Interference Hypothesis. Although the role of interference in the repetition of a series of digits seems a reasonable explanation, the attempt to impose structure on a series of geometric shapes does not.

The present study, then, finds that three of the ITPA subtests distinguish the language functioning of "advantaged" and "disadvantaged" children. They are most different on a vocabulary task, an analogies task, and a task which measures what appear to be grammatical habits. There are no differences between the groups on tasks which require sequential habits.

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Table 1

Sex, Race, and Grade Distribution in

Center City Public School Samples

| Group | Sex | | Race | | Grade | |
|---|---|---|---|---|---|---|
| | M | F | W | N | K | 1 |
| Unity | 34 | 30 | 11 | 53 | 32 | 32 |
| Diversity | 35 | 30 | 32 | 42 | 31 | 34 |
| (Receivers) | 31 | 31 | 57 | 5 | 30 | 32 |

Table 2

Description of ITPA Subtests

1. Auditory Decoding--Vocabulary test requiring only "yes" or "no" answer, e.g., Do females slumber?

2. Visual Decoding--Matching a stimulus picture to its perceptual counterpart, e.g., Office table and coffee table.

3. Auditory Vocal Association--A verbal analogies test, e.g., Soup is hot. Ice cream is _____.

4. Auditory Vocal Automatic--Correct grammatical form must be provided in sentences, e.g., Here is an apple. There are two _____.

5. Auditory Vocal Sequencing--Digit repetition as in Binet.

6. Visual Motor Association--Relate pictures on some conceptual basis, e.g., Sock with shoe.

7. Visual-Motor Sequencing--Sequence of geometric shapes must be reproduced from memory.

8. Motor Encoding--Expressing one's ideas in terms of meaningful gesture, e.g., "Show me what you should do with this." (hammer)

9. Vocal Encoding--Describe a simple object verbally, e.g., Block, nail.

Table 3

Intercorrelation Matrix for ITPA Subtests

| | Aud.-Voc. Auto. | Vis. Dec. | Mot. Enc. | Aud.-Voc. Assn. | Vis. Mot. Seq. | Voc. Enc. | Aud.-Voc. Seq. | Vis. Mot. Assn. | Aud. Dec. |
|---|---|---|---|---|---|---|---|---|---|
| Aud.-Voc. Auto. | -- | | | | | | | | |
| Vis. Dec. | 26 | -- | | | | | | | |
| Mot. Enc. | 28 | 38 | -- | | | | | | |
| Aud.-Voc. Assn. | 62 | 45 | 39 | -- | | | | | |
| Vis.-Mot. Seq. | 20 | 22 | 24 | 35 | -- | | | | |
| Voc. Enc. | 28 | 32 | 38 | 38 | 14 | -- | | | |
| Aud.-Voc. Seq. | 23 | 06 | 13 | 37 | 15 | 21 | -- | | |
| Vis.-Mot. Assn. | 22 | 26 | 16 | 31 | 11 | 33 | 10 | -- | |
| Aud. Dec. | 50 | 24 | 32 | 54 | 14 | 21 | 25 | 32 | -- |

Table 4

Comparison of ITPA Mean Standard Scores for

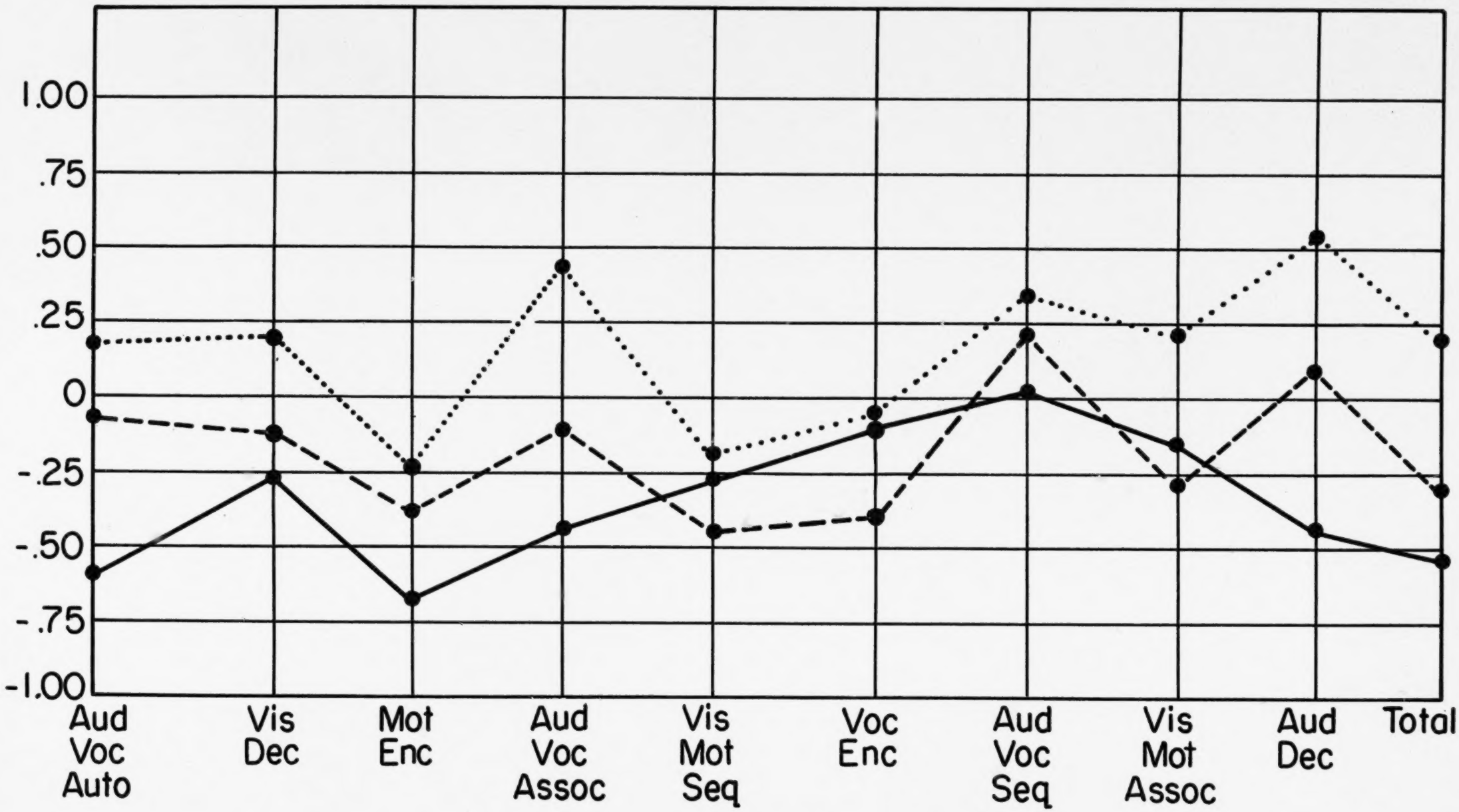
Three School Samples

| Subscale | $Group_1$ | $Group_2$ | $Group_3$ | F | Significant Differences |
|---|---|---|---|---|---|
| Aud.-Voc. Auto. | -.60 | -.06 | .17 | 9.00** | 1,2*<br>1,3** |
| Vis. Dec. | -.26 | -.12 | .19 | 3.44* | 1,3* |
| Motor Enc. | -.71 | -.37 | -.24 | 4.49* | 1,3** |
| Aud.-Voc. Assoc. | -.43 | -.09 | .44 | 8.94** | 1,3**<br>2,3* |
| Vis.-Mot. Seq. | -.28 | -.41 | -.17 | .96 | |
| Voc. Enc. | -.14 | -.38 | -.15 | 1.08 | |
| Aud.-Voc. Seq. | .04 | .24 | .34 | 1.29 | |
| Vis. Mot. Assoc. | -.13 | -.29 | .20 | 3.73* | 2,3* |
| Aud. Dec. | -.44 | .10 | .53 | 10.96** | 1,2*<br>1,3** |
| Total Score | -.53 | -.31 | .21 | 6.19** | 1,3**<br>2,3* |

Group 1 = Unity School
Group 2 = Diversity School
Group 3 = Receiver Schools
* Sig ≤ .05
** Sig ≤ .01

## Figure Caption

Fig. 1. A profile analysis of the three school samples, illustrating the discrepancies and convergence of scores on the ITPA. Note that the profiles for the Diversity School and the Receiver School are parallel. The profile for the Unity School crosses the profile of the Diversity School on the vocal encoding and the visual-motor sequencing.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Aud Voc Seq
Vis Mot Assoc
Aud Dec
Total
Unity (1)
Diversity (2)
Receiver Schools (3)

Fig. 1